

TITLE OF THE INVENTION

ICE MAKER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of Korean Patent Application No. 2003-33724, filed on May 27, 2003 in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0002] The present invention relates, in general, to ice makers and, more particularly, to an ice maker capable of efficiently making and removing ice cubes.

2. Description of the Related Art

[0003] Generally, an ice maker is installed in a refrigerator or a vending machine to make ice cubes with water supplied to the ice maker.

[0004] A conventional ice maker includes drive and driven pulleys spaced apart from each other by a predetermined distance. An ice making conveyor is wrapped around the drive and driven pulleys, and is provided with a plurality of ice making parts to contain water therein. Further, a heater is installed in an interior of the ice making conveyor to apply heat to lower ice making parts which face downward, thus removing the ice cubes from the lower ice making parts.

[0005] Thus, when the ice cubes are formed in the ice making parts which face upward, the ice making conveyor is moved by the drive and driven pulleys to make the ice making parts having the ice cubes face downward. Thereafter, electricity is applied to the heater to generate heat. The ice cubes are removed from the ice making parts by the heat.

[0006] However, the conventional ice maker has a problem in that the heat generated by the heater affects the upper ice making parts in which the ice cubes are being formed, as well as the lower ice making parts, thus it takes longer time to form the ice cubes in the upper ice making parts.

SUMMARY OF THE INVENTION

[0007] Accordingly, it is an aspect of the present invention to provide an ice maker capable of efficiently making and removing ice cubes.

[0008] Additional aspects and/or advantages of the invention will be set forth in part in the description which follows and, in part, will be obvious from the description, or may be learned by practice of the invention.

[0009] The foregoing and/or other aspects are achieved by an ice maker comprising first and second pulleys spaced apart from each other, a drive unit to rotate the first and second pulleys, an ice making conveyor wrapped around the first and second pulleys and having a plurality of ice making parts concavely formed to contain water therein, a heat/light generating unit located an interior of the ice making conveyor to generate heat and light, and a reflecting member to downwardly reflect the heat and the light generated from the heat/light generating unit.

[0010] The heat/light generating unit further comprises a halogen lamp to generate the heat and light.

[0011] The reflecting member comprises an arc-shaped cross-section to cover upper and side portions of the heat/light generating unit, to downwardly guide the heat and the light generated from the heat/light generating unit.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] These and/or other aspects and advantages of the invention will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings of which:

FIG. 1 is an exploded perspective view of an ice maker, according to an embodiment of the present invention; and

FIG. 2 is a sectional view of the ice maker of FIG. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0013] Reference will now be made in detail to an embodiment of the present invention, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to like elements throughout. The embodiment is described below in to explain the present invention by referring to the figures.

[0014] In FIGS. 1 and 2, an ice maker according to the present invention comprises first and second pulleys 10a and 10b spaced apart from each other by a predetermined distance. A drive unit 20 rotates the first and second pulleys 10a and 10b. An ice making conveyor 30 is wrapped around the first and second pulleys 10a and 10b.

[0015] The first pulley 10a comprises a drive pulley 10a which is rotated by power transmitted from the drive unit 20. The second pulley 10b comprises a driven pulley 10b which is rotated by the power transmitted from the first pulley 10a through the ice making conveyor 30. A support bracket 11 is included between the drive and driven pulleys 10a and 10b. . The drive and driven pulleys 10a and 10b are respectively installed at opposite ends of the support bracket 11 to be spaced apart from each other by a predetermined distance.

[0016] The ice making conveyor 30 comprises tray cells 31 having concave ice making parts 31a. The tray cells 31 are hinged to each other to form the ice making conveyor 30 in a closed-loop shape. Each of the ice making parts 31a, is made of a metal, such as stainless steel, to allow heat to be easily transferred to each of the ice making parts 31a.

[0017] An engaging projection 31b is projected from an inside portion of each of the tray cells 31 to be subject to the power transmitted from the drive pulley 10a. Further, engaging holes 12 are provided on outer circumferential surfaces of the drive and driven pulleys 10a and 10b at regular intervals to engage with the engaging projections 31b. Thus, when the power is transmitted from the drive pulley 10a to the tray cells 31 by an engagement of the engaging projections 31b with the engaging holes 12, the tray cells 31 rotate around the drive and driven pulleys 10a and 10b.

[0018] According to the present invention, the ice maker also comprises heat/light generating units 40. The heat/light generating units 40 are located in an interior of the ice making conveyor

30 to transmit energy in the form of heat and light. Further, a reflecting member 50 is provided at a predetermined position around the heat/light generating units 40, and reflects the heat and the light generated from the heat/light generating units 40, to guide the heat and the light to the tray cells 31 disposed under the heat/light generating units 40. Therefore, the reflecting member 50 concentrates the light on a desired portion of the ice making conveyor 30 to be heated, using a characteristic of light that is more easily reflected than heat, to allow the energy to be efficiently applied to the desired portion, while minimizing the amount of the energy transmitted to the tray cells 31 located above the heat/light generating units 40.

[0019] According to the embodiment of the present invention, each of the heat/light generating units 40 comprises a halogen lamp which is used as a light source. The halogen lamp maintains an interior temperature of 250° or higher so as not to be blackened by tungsten evaporated from a filament provided in the halogen lamp. Thus, the halogen lamp is capable of generating light and heat.

[0020] The reflecting member 50 comprises an arc-shaped cross-section to cover upper and side portions of the heat/light generating units 40. Thus, the reflecting member 50 reflects the light generated by the heat/light generating units 40 and guides the light below the heat/light generating units 40.

[0021] The support bracket 11 is mounted at both ends thereof to an interior of a cooling compartment to install the ice maker in the cooling compartment. According to the embodiment of the present invention, a mounting bracket 60 is included to hold both sides of the support bracket 11, thus supporting the ice making conveyor 30 in the cooling compartment.

[0022] An ice storage tray 70 is located under the ice making conveyor 30 to store ice cubes formed in the ice making parts 31a. A water supply pipe 80 is located above the ice making conveyor 30 to supply water to the tray cells 31.

[0023] The operation and operational effects of the ice maker according to the present invention will be described in the following in detail with reference to the attached drawings.

[0024] First, water is supplied through the water supply pipe 80 to the ice making parts 31a of the tray cells 31 which face upward. Since the ice maker is installed in the cooling compartment of a refrigerator, cool air is continuously supplied to the water which is contained in the ice

making parts 31a. Thus, after a predetermined period, the water in the ice making parts 31a freezes into ice.

[0025] The ice cubes must be removed from the tray cells 31 to be used. In order to remove the ice cubes from the tray cells 31, the ice making conveyor 30 is operated by the drive unit 20, and the drive and driven pulleys 10a and 10b. In a detailed description, when electricity is applied to the drive unit 20, the drive pulley 10a rotates. At this time, the engaging holes 12 included on the outer circumferential surface of the drive pulley 10a engage with the engaging projections 31b provided on the tray cells 31 to move the ice making conveyor 30. As a result of the movement of the ice making conveyor 30, the ice making parts 31a containing the ice cubes face downward.

[0026] In such a state, when electricity is applied to the heat/light generating units 40, the heat/light generating units 40 placed in the interior of the ice making conveyor 30 transmit the energy in the form of heat and light. Therefore, light downwardly irradiated from the heat/light generating units 40 is directly applied to the tray cells 31 located under the heat/light generating units 40. On the other hand, light upwardly and laterally irradiated from the heat/light generating units 40 is reflected by the reflecting member 50 that covers the upper and side portions of the heat/light generating units 40, thus being applied to the tray cells 31 located under the heat/light generating units 40.

[0027] Most of the light energy generated by the heat/light generating units 40 is transmitted to the tray cells 31 located under the heat/light generating units 40. The light energy is converted into the heat energy to remove the ice cubes from the ice making parts 31a.

[0028] The ice cubes of the tray cells 31 located under the heat/light generating units 40 are heated by the heat and light generated by the heat/light generating units 40. Therefore, surfaces of the ice cubes which are in contact with the tray cells 31 defining the ice making parts 31a are heated, and eventually melted, thus breaking a holding force. The ice cubes fall due to gravity from the ice making parts 31a to be stored in the ice storage tray 70.

[0029] As is apparent from the above description, the present invention provides an ice maker having heat/light generating units to generate heat and light, and a reflecting member to downwardly reflect the heat and the light generated from the heat/light generating units, allowing the heat to be concentrated on ice making parts of tray cells that are located under the heat/light

generating units, while minimizing the amount of the heat transmitted to tray cells located above the heat/light generating units. Therefore, the ice cubes are efficiently removed from the ice making parts located under the heat/light generating units.

[0030] Although an embodiment of the present invention has been shown and described, it would be appreciated by those skilled in the art that changes may be made in this embodiment without departing from the principles and spirit of the invention, the scope of which is defined in the claims and their equivalents.